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Diagnosis and follow-up of IPMNS of the pancreas – bringing the ethical issues into focus

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ABSTRACT

Background: Intraductal papillary mucinous neoplasms (IPMNs) of the pancreas present a broad spectrum of biological behavior, ranging from benign to malignant. Their management poses significant ethical dilemmas, particularly concerning diagnostic uncertainty, the risk of overdiagnosis and overtreatment, and resource allocation.
Methods: This qualitative study employed a constructivist approach to explore the ethical challenges faced by surgeons in managing IPMNs. Data were collected through focus group meetings (FGMs) with members of an expert working group at the Verona Evidence-Based Meeting on IPMNs (2020). Discussions were analyzed to identify key ethical concerns.
Results: The analysis highlighted several major ethical concerns: (1) decision-making under diagnostic uncertainty, (2) ethical challenges in patient communication, (3) overdiagnosis and over-surveillance due to defensive medicine and patient anxiety, (4) overtreatment through unnecessary surgery, and (5) issues of distributive justice in access to care and healthcare resource utilization. Participants

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Ethical dilemmas
Diagnostic uncertainty
Overdiagnosis
Overtreatment
Defensive medicine
Shared decision-making
Patient communication
Healthcare resource allocation

emphasized the difficulty of balancing transparency with the need to minimize psychological distress in patients, as well as the challenge of applying international guidelines in diverse healthcare settings.
Conclusions: Ethical decision-making in IPMN management requires balancing the risks of malignancy with the potential harms of overtreatment, while also considering patient autonomy and resource limitations. Enhancing decision-support tools, improving surgeon training in communication, and refining clinical guidelines to incorporate ethical considerations may help address these challenges. Further research is needed to develop strategies for more individualized and patient-centered care.
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1. Introduction

Intraductal papillary mucinous neoplasms of the pancreas (IPMN) were first described in 1982 when four patients with pancreatic carcinoma with favorable outcomes were reported [1]. IPMNs have a broad spectrum of biological aggressiveness, from benign to borderline and, finally, malignant [2].

Therefore, IPMN is a type of pancreatic cystic neoplasm that presents unique challenges in clinical management [3]. Surgeons often encounter dilemmas regarding the appropriate timing and extent of surgical intervention, considering factors such as the risk of malignancy [4], patient comorbidities, and quality of life considerations.

Despite advancements in imaging and diagnostic techniques, there is still considerable debate and variability in managing IPMN. Clinicians face the challenge of determining which IPMNs can be safely observed and which need to be surgically removed. In the first case, the risk is the possible progression of the IPMN, while in the second case, the patient is exposed to the dangers of pancreatic surgery sequelae.

Currently, the management of IPMNs is mainly driven by the International Guidelines of the International Association of Pancreatology (IAP), the European evidence-based guidelines, and the American Gastroenterological Association (AGA) guidelines.

Various discrepancies exist between those guidelines, available evidence, and the policies and clinical practice.

Clinical practice guidelines offer some direction but leave room for interpretation, particularly in borderline cases where the risks and benefits of surgery are less clear. This lack of consensus underscores the need to explore the perspectives and experiences of surgeons grappling with these decisions [5].

Examining surgeons' ethical considerations may illuminate how they navigate these complex dynamics and strive to deliver patient-centered care. Accordingly, this study aims to acknowledge the moral dilemmas that should be considered within the pathology and improve the current management of IPMNs.

2. Methods

2.1. Methodological perspective

We adopted a qualitative research design informed by a constructivist approach that we considered remarkably consistent with the study's aims to explore the subjective experiences, perspectives, and meanings attributed to the ethical dilemmas surgeons face in managing the IPMN of the pancreas.

Qualitative research focuses on understanding phenomena from the perspective of those experiencing them, often through in-depth exploration and interpretation of textual data. It is particularly well-suited for investigating complex social phenomena, such as ethical dilemmas in healthcare, where context and subjective interpretations play a significant role.

The constructivist paradigm posits that reality is socially constructed through individuals' interactions and interpretations of the world. In qualitative research, a constructivist approach acknowledges that knowledge is not objective but instead constructed by individuals based on their experiences, beliefs, and social contexts. Rather than seeking to uncover universal truths, the focus is on understanding the diversity and complexity of human experiences and interpretations.

2.2. Research setting and participants

An international consortium of experts, the Verona Evidence-Based Meeting on IPMNs (Verona EBM 2020 on IPMNs), was formed, and the first meeting was held in October 2020. The Scientific Committee identified four major topics for discussion in separate working groups. The members of working group IV, "Ethics, Healthcare System, and Cost-effectiveness," discussed the ethical issues of IPMNs. Group IV conducted this study to collect experts' opinions and considerations on ethical issues related to IPMNs. Consequently, members of working group IV were invited to three data-collection meetings conducted by Professor R. Salvia with the external supervision of a bioethicist.

2.3. Data collection

We employed focus group meetings (FGMs) for data collection. FGMs are qualitative research methods involving interactive discussions among a small group of participants, facilitated by a moderator, to explore their perceptions, opinions, and experiences on a specific topic of interest. Participants were asked to reflect on their experiences with IPMN management, focusing on their ethical dilemmas and the factors influencing their decision-making processes. Researchers pre-planned a focus group guide for the two moderators (KO and AB). During the discussion, the moderators used open-ended questions to begin and facilitate the conversation between the participants, as reported in Table 1.

2.4. Data analysis

FGMs were audio-recorded, transcribed verbatim by MT, and anonymized to ensure confidentiality. AB and MT analyzed them using thematic analysis. Braun and Clarke [6] outlined thematic analysis, which was employed to analyze the data gathered from the FGMs. The thematic analysis offers a flexible and systematic approach to identifying patterns, themes, and variations within qualitative data. It is well-suited for uncovering the complexities inherent in surgical decision-making processes.

Transcripts were repeatedly read and re-read to familiarize with the content and identify initial patterns and themes. Meaningful segments of data relevant to the research question were systematically coded. Codes were collated and organized into potential themes based on their relevance to the research aims. Similar codes were grouped to form overarching themes reflecting the key concepts and patterns identified within the data.

Table 1
Focus group's moderation scheme.

Main topics	Core questions	Prompts
Description and definition of 'ethical issues' in IPMN of the pancreas	Could you describe a situation that you find morally problematic in the care of patients with IPMN of the pancreas?'	Could you describe a situation that you find morally problematic in the care for patients with IPMN of the pancreas? With "morally problematic" we mean that you observe yourself or others to be uncomfortable or in conflict with something that goes against your values or those of others/you or others hold as the right or good course of action in clinical practice. This can present in form of a conflict or a dilemma of choice, but can also simply having to do with a "bad gut feeling" about what is right or good in certain situations, in communication or in relationships. If you remember this situation(s) what was for you personally the most difficult? What do you perceive as specifically ethically difficult around IPMN of the pancreas that you don't meet in other pathologies?
Perception of patients' ethical issues	What do you perceive patients with IPMN of the pancreas live as ethically problematic in their medical care?	Of course, we cannot know what patients perceive as ethically problematic in their care unless we ask patients themselves. Nevertheless, patients do talk with their physicians. From your practice, what do you know patients with IPMN of the pancreas perceive as problematic in their medical care? Do you see patients with IPMN struggle regularly with similar issues?
Decision-making	How can we support patients to come to decisions about surveillance/operation in front of uncertainty about risks and outcomes?	It is often unclear which of the choices (survey or operate) is actually better for a particular patient. Often the risks and benefits of the operation needs to be weighed against possible psychological reactions during the surveillance which might significantly affect quality of life as well as physical functioning of this particular patient. All of these aspects are hypothetical risks. How do you talk with your patients about this? Imagine explaining the medical importance to undergo surgery for an IPMN to a patient, but the patients, free of symptoms, does not understand the necessity for surgery and so questions the intervention. At the same time, you ask yourself whether the intervention is necessary as we cannot tell with certainty that the mass will become malign in future and the intervention contains a certain risk. Do you meet this kind of situations and if so, how do you deal with this in your clinical practice? How should this uncertainty be taken into consideration in decision-making with the patient? From your experience, what is needed so that patients are best be supported in these decisions under uncertainty?
Harm through intervention or non-intervention	Do you perceive sometimes a risk of harm to the patients due to too much or too less intervention or diagnostics?	Are there situations in which you perceive a possible harm from intervention or diagnostics? Are there situations in which you perceive a possible harm from non-intervention/non-diagnostics? If so, how do you deal with that?
Issues regarding justice, allocation of resources and providing good care	Do questions around financing or allocation of resources play a role in your decision making and care for patients with IPMN of the pancreas and if so how?	Do you experience in your institution/country that considerations of financing or allocation of resources impact professional decisions on care for IPMN of the pancreas? If so, could you elaborate more on that? Would you think it would be possible to avoid extensive surveillance in some patients? On what criteria should these decisions be based? Should cost-effectiveness or allocation of resources play a role in individual care plans? Is there a limit to the role of these factors? Would you think it is justifiable to consider a psychological burden of the surveillance in evaluating the cost-effectiveness of IPMN surveillance protocols? Is it always easy for you to apply the existing national or international guidelines? Do you feel they sustain you in moral decision making?
Closing	Thank you for all that valuable information, is there anything else you would like to add before we end the meeting?	

The identified themes were reviewed and refined through discussions among the research team, ensuring they accurately represented the data and captured the nuances of participants' experiences and perspectives.

Each theme was described in detail, accompanied by illustrative quotes from the transcripts to support its interpretation. Themes were named descriptively to reflect their content and relevance to the study's aims.

2.5. Rigor

To ensure the trustworthiness and rigor of the study, we adhered to established qualitative research criteria: credibility, transferability, dependability, and confirmability [7]. Credibility was fostered by employing a transparent and systematic thematic analysis, following Braun and Clarke's [6] guidelines. This approach enabled a comprehensive data exploration, ensuring that the themes accurately reflected the participants' experiences and ethical dilemmas regarding IPMN management. Transferability was addressed by providing detailed contextual information about the research setting, participants, and focus group dynamics. This allows readers to assess whether the findings apply to similar contexts, particularly in healthcare systems facing ethical complexities in surgical decision-making. Dependability was ensured by meticulously documenting the research process, from data collection to analysis, and providing an audit trail for

external checks performed by an experienced qualitative methodologist (LG). Multiple researchers (AB, MT, and KO) reviewed all audio recordings, transcripts, and coding decisions, ensuring consistency in the analytical process. Confirmability was achieved through reflexivity, as the research team engaged in regular reflective discussions to acknowledge and mitigate potential biases. Including multiple investigators and peer debriefing sessions ensured that the findings were grounded in the data and not influenced by the researcher's preconceptions.

2.6. Ethical considerations

All participants received written information about the project and its aims and were subsequently invited to participate. We stressed that participation in this study was voluntary and withdrawal from the study was possible at any time. The anonymity of participants and institutions was maintained in the interview transcripts.

3. Results

We conducted 3 FGMs (mean duration 120') involving 15 working group IV members, who were acknowledged as authors of this study. Participants were directors of pancreatic surgical centers based in different countries: Italy, France, Ireland, Netherlands, Germany, Serbia, USA (Pittsburgh, New York, Boston), South Africa, South Korea, and Singapore.

3.1. Findings

In the qualitative analysis of three focus groups, several ethical dilemmas emerged from the discussions about managing IPMN of the pancreas. Given the assumption that a morally appropriate approach to this kind of pathology can be framed within the principles of proportionality and non-maleficence, the findings reveal how uncertainty, over-diagnosis, over-surveillance, and the potential for over-treatment through surgery shape the ethical landscape of clinical decision-making. Below, the key themes and sub-themes (shown in Table 2) are discussed.

3.2. Deciding under uncertainty

3.2.1. Reasons for uncertainty

Participants highlighted the profound diagnostic uncertainty surrounding IPMN, often exacerbated by a lack of high-quality data and variability in clinical guidelines. They affirmed that surgeons need help making decisions when even the multidisciplinary team lacks consensus on the diagnosis.

> "From 100% of surgeries in the case of IPMNs, 60% have malignancy, and 40% have no malignancies. May these cysts never turn malignant, then surgery and post-surgical adverse effects for no reason; but we will not be able to know; only through better data." (FGM 2)

This would lead to ethical concerns about whether decisions based on such uncertainty might result in unjust outcomes, including inappropriate treatment or overtreatment.

3.2.2. Communicating under uncertainty

Participants highlighted how surgeons face an ethical challenge when communicating with patients who expect clear answers and reassurance. However, delivering uncertain or unclear diagnoses can cause additional stress or even harm to patients. Participants debated whether it was ethically appropriate to disclose the full extent of uncertainty to patients or to withhold some information to protect them from distress.

> "And by explaining a lot to the patient, it might harm him more because he's thinking, he's unsure, he feels that the doctor is also very unsure, and at the end, we have psychological damage on the patient by being very open and trying to have the patient as a partner with which we can discuss the things" (FGM 1)

This raised fundamental questions about transparency and trust in the patient-physician relationship.

3.2.3. Difficult trust

Participants raised concerns about whether uncertainty could compromise trust between healthcare providers and patients. In light of this uncertainty, they emphasized the ethical importance of educating patients about their conditions and treatment options. On the other hand, given the complexity of IPMNs, the uncertainty surrounding malignant progression, and the psychological impact of a "precancerous" diagnosis, we may come across the risk that the patient's opinion is often significantly influenced by the physician's framing of the disease, its risks, and management options.

Physicians have an ethical responsibility to present information in a balanced, transparent, and non-directive manner, minimizing framing effects while supporting patient autonomy.

In this context, engaging in thorough discussions with patients and guiding them through the decision-making process was deemed essential for delivering quality care.

> "It's all about educating the patient." (FGM 1)

Over-Diagnosis and Over-Surveillance.

Table 2
Themes and subthemes overview.

Themes	Sub-themes
Deciding under Uncertainty	Reasons for Uncertainty
	Undermining trust
	Difficult trust
Over-Diagnosis and Over-Surveillance	Reasons Why Surveillance Can Be Ethically Problematic
	Triggers That Lead to Over-Diagnostics
	Discontinuity of Surveillance
Over-Treatment Through Surgery	Reasons Why Surgery Can Be Ethically Problematic
	Triggers That Lead to Over-Treatment Through Surgery
	Decision Not to Go for Surgery
Distributive justice	Resource Limitations
	Access to care

3.2.4. Reasons why surveillance can Be ethically problematic

Surveillance strategies, such as repeated MRIs, were often ethically questionable due to their psychological burden on patients, their financial cost, and their potential clinical futility. For instance, many cysts may be too small, slow-growing, or benign, making long-term surveillance unnecessary. This highlighted a broader issue: under what conditions should surveillance be continued or discontinued?

3.2.5. Triggers that lead to over-diagnostics

According to the participants, several factors contributed to over-diagnosis, including defensive medicine practices where physicians aimed to avoid missing a malignancy. It was also noted that physicians may be influenced by the fear of legal liability, leading to excessive surveillance.

> "The worst thing you can feel or at least, let's say, medical-legally, you're following up with someone, and he turns to cancer. It's worse, at least in a specialized pancreatic center, you under-treat the patient, and he's going to be worse than over-treatment. So, you're in a situation where you, as a pancreatic surgeon, cannot miss pancreatic cancer, nor can you under-treat a patient who has a benign condition that turns into pancreatic cancer. It seems worse, especially if you look at medical-legal aspects." (FGM 2)

Additionally, patients' fear of malignancy or external influences from the internet or other clinics can pressure surgeons into unnecessary surveillance.

> "I get a lot of patients already so primed by either a referring physician or what they read on the Internet, or they search on PubMed, and they read scientific articles. Then they see our guidelines and see how everything is talking about cancerous. So, we are already primed for something, either surgery or surveillance, and there is almost no discussion anymore about trying to talk them out of this." (FGM 1)

> "When they type 'pancreatic cancer' on the internet, they see horrible things, and even if they have 0.01%, they think surveillance is good. The doctor is taking care of me; I'm being looked at, so I'm safe. And even if you then tell them: 'This can happen, this can happen, we might miss something,' they only hear the good part of surveillance, and they kind of shut out the bad side or the negative consequences" (FGM 1)

3.2.6. Discontinuity of surveillance

Another ethical dilemma is when to discontinue surveillance. It raises the question of when it is justifiable to stop monitoring a patient whose cysts show no significant growth or worrisome features. Discontinuing surveillance is difficult due to the fear of overlooking future malignancies but continuing it may burden the patient and healthcare system.

This emerged mainly when participants discussed cases of elderly people. Justification for continued surveillance was challenged in this context: when to stop surveillance, whether to operate earlier. At the same time, the patient is still fit for surgery and when a patient is too frail to undergo surgery. Instead, frailty and comorbidities are more relevant factors for decision-making than age itself.

3.2.7. Over-treatment through surgery

3.2.7.1. Reasons why surgery can Be ethically problematic. Surgeons face significant ethical dilemmas when deciding whether to operate on patients with IPMN. While surgery can be lifesaving if malignancy is present, data suggests that up to 40% of cases show no malignancy post-surgery, raising concerns about overtreatment.

> "Data shows that 50% of people over 50 years old have cysts on the pancreas: Are we going to do MRIs in all of them?" (FGM 2)

Surgery may result in unnecessary risks, including post-operative complications, reduced quality of life, and significant financial costs. In particular pancreatic resections may result in endocrine insufficiency (including new-onset diabetes), exocrine pancreatic insufficiency, biliary complications or cholangitis after biliary reconstruction, and long-term nutritional consequences. However, reliable predictive data is needed to know, in advance, which IPMNs will turn malignant, complicating decision-making.

The question of whether age could be a criterion for decisions in favor of or against surgical intervention was also debated. However, participants agreed that it was important to avoid "ageism."

3.2.7.2. Triggers that lead to over-treatment through surgery. Several triggers contribute to over-treatment, including the belief that under-treatment is worse than over-treatment, leading surgeons to operate as a precaution. Defensive medicine practices, driven by legal concerns, also play a role.

> "For the surgeon, it could be a defensive move to perform surgery on the patient because if after three months you find out that he has cancer and you didn't operate on him before, then you are in trouble. So sometimes you prefer to resect the patient as defensive medicine." (FGM 1)

Furthermore, the lack of high-quality data creates uncertainty, and some patients, fearing malignancy, push for surgery even when informed of the low risk. Surgeons themselves may be influenced by their specialty, with a predisposition towards surgical intervention, sometimes under pressure to meet operational quotas.

> "Some centers … some medical people get reimbursed based on how aggressive and invasive you are, and it's inherent in the medical system." (FGM 3)

3.2.7.3. Decision not to go for surgery. The decision to forgo surgery poses ethical questions. Surgeons must carefully weigh the risk of malignancy against the risks associated with surgical intervention. Ethical decision-making in this context involves assessing the trade-off between the potential benefit of preventing cancer and the harm that surgery could inflict, especially when the risk of malignancy is low.

3.2.7.4. Distributive justice. The focus groups' analysis highlighted resource allocation and distributive justice as key ethical dilemmas across different healthcare systems. While resource limitations may appear less prominent in wealthier Western countries, they remain significant across all nations, albeit manifesting differently based on each health system's structure and financial capacity.

3.2.7.5. Resource limitations. Participants noted that guidelines often prescribe more surveillance than necessary, which can be financially unsustainable outside specific healthcare systems (e.g., U.S., EU).

While many Western countries may face fewer financial barriers in offering surveillance, a closer look reveals discrepancies between public and private patients. In less wealthy countries, adhering to international guidelines may become financially prohibitive, leading to unequal access to care.

More surveillance than necessary also meant the risk of heightening the burden on healthcare professionals, particularly in multidisciplinary teams. Surgeons and radiologists risk facing overwhelming caseloads, limiting their capacity to follow guidelines, such as the recommendation for every patient to be reviewed by a radiologist and MDT. This often resulted in superficial discussions due to time constraints, undermining the quality of care.

3.2.7.6. Access to care. Participants concurred that access to healthcare services constitutes an important ethical issue that warrants attention. The availability of high-quality diagnostics and expert consultations varies significantly between and within countries. Disparities in access to advanced diagnostic tools, such as MRI scans, were highlighted as particularly problematic in resource-limited settings and regarding the costs of diagnostics and treatments across different nations. Additionally, participants pointed out that the COVID-19 pandemic exacerbated these challenges, leading to delays in routine examinations and necessitating healthcare providers to prioritize certain patients over others.

Furthermore, some countries have a stark divide between public and private patients. Public patients may endure up to six months of waiting for routine MRI scans, while private patients often enjoy near-instantaneous access. This disparity also applies to surgical interventions, where public patients typically face significantly longer wait times than their private counterparts. Such inequities raise serious ethical concerns, especially when considering the gold standard of care provision.

4. Discussion

The current study represents an important starting point for surgeons to understand the ethical dilemmas of treating pancreatic IPMNs. Many findings point to a multi-dimensional ethical setting characterized by medical uncertainties, overdiagnosis, overtreatment, and distributive justice. These also raise critical moral issues in this study, having robust bearings on clinical decision-making and quality of care; thus, careful considerations and further research are warranted.

One of the key ethical challenges has been the deepening diagnostic uncertainty surrounding IPMNs, given that uncertainty is in and of itself a consequential ethical issue. This uncertainty is heightened by a lack of quality data and inconsistencies within clinical guidelines, which aligns with previous studies highlighting the difficulty in predicting the malignant transformation of IPMN [8], [9]. In our results, this has implications beyond clinical decision-making alone. It may affect the dynamics of the patient-physician relationship and trust [10], [11]. This begs the question of balancing transparency with ethical responsibility without causing patients unnecessary psychological distress.

This tension between full disclosure and protective withholding resonates with broader debates in medical ethics between truth-telling and therapeutic privilege [12], [13]. The principles of patient autonomy and informed consent support complete openness. However, if it causes significant distress, it would directly violate the principle of non-maleficence. Our results suggest surgeons tried to overcome this dilemma by educating their patients and extending the discussion—a practice supported by the suggestions of shared decision-making in uncertain settings [14] [15].

When guiding our patients in the decision making process we also underlined the importance of adapting communication strategies to the individual patient, regardless of background. This includes the use of clear language, visual aids, and iterative discussions to ensure adequate understanding.

Rather than limiting patient involvement based on educational level, the ethical approach is to support informed decision-making through tailored, context-sensitive communication.

The potential for over-diagnosis and resultant over-surveillance or over-treatment is thus an ethical concern in the management of IPMN; this is because patients are exposed to inherent risks of unnecessary intervention with possible adverse effects, psychological distress, and financial burden not just to the patient but also to the healthcare system. This finding, therefore, echoes more significant concerns about over-diagnosis in medicine, more precisely in cancer screening [16], [17]. This optimum balance, concerning IPMNs, must weigh the psychological burden, financial costs, and potential clinical futility of prolonged surveillance against the risk of missing malignancy. The drivers of over-diagnosis and overtreatment that emerged from our study include defensive medicine practices and patient anxiety, emerging into a complex interplay of clinical, legal, and psychological factors involved in medical decision-making. The complexity requires even a more fine-tuned approach to the guideline development and implementation pendulum, weighing clinical outcomes, patient quality of life, and healthcare resource utilization [18].

The ethical dilemma of when to stop surveillance, particularly in elderly patients, reflects broader controversies on the role of age in medical decisions [19], [20].

Our results indicate that frailty and comorbidities may be more ethically justifiable factors than age alone.

This central concern of distributive justice, which is emerging prominently in healthcare ethics, underlines the significant ethical difficulties raised by constraints and inequalities in resource allocation. Large differences in adherence to international guidelines in high-versus low-resource settings raise essential questions about the global generalizability of such guidelines [21], [22], [23], [24].

This finding highlights the need for guidelines sensitive to particular contexts, along with resource availability and cost-effectiveness considerations, especially in poorer countries.

These identified disparities in access to care between and within countries reflect broader health equity issues [25]. This increase in inequities during the SARS-CoV-2 pandemic agrees with the most recent literature on the impact of the pandemic on the provision of healthcare services unrelated to the novel coronavirus [26]. These findings again emphasize the need to implement policies and interventions relevant to addressing healthcare inequities at both national and international levels.

4.1. Implications for clinical practice and policy

Our results highlight the need for enhanced decision-support tools to guide surgeons through the intrinsic uncertainty surrounding IPMN management. These tools should be developed to incorporate clinical predictors and considerations related to patient preference and quality of life, as mentioned earlier [17], [27]. Therefore, these findings underscore how germane effective communication strategies are in situations of uncertainty ([14], [15]). The curriculum for surgical training should focus on competency building in communicating uncertainty and engaging in shared decision-making processes.

Third, the present study's findings underscore the need to reconsider recommendations on managing IPMN, focusing on a balance between clinical efficacy resource use, and patient-centered outcomes. This may involve establishing flexible, context-sensitive guidelines adaptable to different healthcare contexts and levels of resource availability ([22]).

Finally, the ethical dilemmas unraveled in the current study also call for further ethical deliberation and discussion among surgical professionals. The introduction of regular ethics consultations and case discussions can help surgeons make decisions in dilemmas, with the overall aim of enhancing patient care [28], [29].

4.2. Limitations and future perspectives

This study has some limitations, which will be discussed in turn. The focus group methodology allows for significant discussion, although this may fall short of capturing the breadth of surgeons' ethical challenges. Though theoretically, the international composition has the benefit of adding extensive value to the diversity of prospective insights, it similarly means that not all findings will be generalizable across comparable healthcare contexts.

It would be advantageous if future studies try to quantify the prevalence of such ethical dilemmas in larger representative samples of surgeons. Besides, the current findings represent surgeons' views about patients' ethical concerns, not the patients' own experiences; research regarding the above ethical considerations from the patient's perspective would be a welcome addition to such studies. Longitudinal research into how ethical decisions affect patient longevity would also be an excellent contribution to the literature. Again, with attention drawn to these nuances in the ethical practice of surgeons dealing with IPMNs, this article shows the broad-brushed stroke with which ethics treads through the medical landscape. Key areas of ethical conflict serve as the foundation for improvement in clinical guidelines, better training of surgeons, and lastly, optimized care for patients during conditions of uncertainty.

5. Conclusion

This qualitative study provides valuable insights into the ethical dilemmas faced by surgeons in the management of IPMN and contributes to a deeper understanding of the complexities involved in surgical decision making.

The findings highlight the ethical challenges faced by surgeons in managing IPMN, where diagnostic uncertainty, the potential for overdiagnosis, and the risks of overtreatment pose significant concerns. Ethical decision-making in this context requires a careful balance between preventing harm, ensuring patient autonomy, and the judicious use of medical resources. Ultimately, these dilemmas call for further research to improve diagnostic accuracy, develop tailored treatment protocols, and a nuanced approach to patient communication and shared decision-making.

By highlighting the ethical dimensions of IPMN management, this study informs efforts to improve patient-centered care, shared decision-making and ethical reflection in surgical practice.

Declarations

The Authors have no conflict of interest to declare.

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